

LOOKINGGLASS FISH HATCHERY

INTRODUCTION

Location

Lookingglass Fish Hatchery is located on the left bank of Lookingglass Creek at river mile 2.2, approximately 85 miles upstream from the mouth of the Grande Ronde River and 324 miles upstream from the mouth of the Columbia River.

Imnaha Satellite Facility is located at river mile 46 on the Imnaha River. This facility is used for adult collection, holding and acclimation. During the summer months, Imnaha Weir is installed across the Imnaha River at this site.

OBJECTIVES

Mitigation

Lookingglass Fish Hatchery is part of the Lower Snake River Compensation Program (LSRCP) and has been in operation since 1982. A satellite station on the Imnaha River is used for smolt acclimation, and collection and holding of adults. Mitigation goals are variable according to adult returns and interagency agreements. The anticipated 1999 release of Imnaha stock (2997) smolts from Imnaha Satellite Facility was 194,900 fish. The actual release was 194,967 Imnaha (2997) smolts at an average weight of 18.3 fish per pound. The 1999 Lookingglass Fish Hatchery allocation of Rapid River (8597) stock smolts was 312,000. A total of 312,146 Rapid River (8597) smolts was released at an average weight of 21.53 fish per pound.

CHINOOK

Adult Returns

Imnaha Weir was installed on July 21, 1999, and chinook collection continued through September 7, 1999. High river conditions prevented placement of the weir until late July, contributing to the low number of chinook collected. A total of 396 Imnaha stock (2999) chinook, 133 males, 76 females and 187 jacks, returned to Imnaha Satellite Facility. Of these, 67 males, 37 females and 160 jacks were collected for broodstock and returned to Lookingglass Fish Hatchery. A total of 120 Imnaha (2999) chinook, consisting of 63 males, 36 females and 21 jacks, were opercle punched and released back into the Imnaha River to spawn naturally. All surviving broodstock were spawned or cryopreserved.

All 1999 brood Rapid River (8599) chinook collected at Lower Granite Dam were trucked to Lyons Ferry Hatchery. A total of 66 Rapid River (8599) chinook returned to Lookingglass Fish Hatchery in 1999; of these, all ADRV finclipped fish were transported to Lyons Ferry Hatchery and all AD-only or unmarked fish were transported to South Fork Walla Walla Hatchery. Lyons Ferry Hatchery received 4 males, 10 females and 3 jacks. South Fork Walla Walla facility received 12 males, 17 females and 20 jacks.

Pittagging of Imnaha, Rapid River and Lostine stock chinook occurred in November 1998 and February 1999. A total of 44,554 Rapid River stock (8597), 23,426 Imnaha stock (2997), and 4,972 Lostine stock (20097) chinook were pittagged and released alive.

Eyed Egg Production

During the report period a total of 37 Imnaha stock (2999) females were spawned for a yield of 168,930 green eggs. These green eggs produced 128,777 eyed eggs. Due to chiller problems at Lookingglass Fish Hatchery, green eggs and sperm were transferred to Irrigon and Oxbow hatcheries by helicopter. Irrigon received 94,391 green eggs and Oxbow received 74,539 green eggs. 58,201 eggs survived to the eyed stage at Oxbow, and were then transferred to Irrigon Fish Hatchery. All 128,777 eyed eggs are currently at Irrigon hatchery. The overall loss from viable to eyed stage was 23.8%.

Imnaha stock (2998) fry were ponded on the 16th and 26th of February.

Conventional Chinook Program

Chinook numbers were insufficient to sustain a hatchery breeding program in 1999. Lookingglass Fish Hatchery received one female and one male Lostine River stock (20099) chinook from the Lostine River collection facility on 7/29/99. Both fish were returned to the Lostine River unspawned on 8/13/99.

Captive Brood Program

A separate annual report covers the operation of this program.

CONSTRUCTION AND MAINTENANCE

Maintenance projects accomplished by the hatchery crew

- Replaced the nozzles on the spray bars at the intake.
- Re-sealed the expansion joints in all 18 of our raceways.
- Installed metal flashing around the outside perimeter of the adult holding ponds to prevent adult jump outs.
- Inspected and repaired the egg incubation trays.
- Constructed and installed new locking system on the upper fish trap to prevent vandalism and theft.
- Excavated and repaired creek water supply valve to raceway 15.

- Both incubation head tanks were cleaned, disinfected, inspected, and reassembled getting them ready for the upcoming spawning season.
- Completed the smolt channel project by removing the old and rotting timbers that covered the channel and replaced them with new metal grip strut.
- Replaced the stairs leading down to the adult weir with new grip strut stair treads.
- Decorative rock landscaping was completed around the hatchery residences and the hatchery visitor information center.
- Repairs were made to the automatic lawn sprinkler system located at the hatchery residences.
- Replaced the cable and limit switch brackets on the on the electric crowder at the Imnaha facility.

Maintenance projects accomplished by contractors

J.B. Bane - Serviced and repaired the Onan generator at the Imnaha satellite facility.

Barnes Diesel - Serviced the diesel generators and was involved with reinstallation of the well motor (#2). Completed installation of emergency starting system, and safety shields on exhaust manifolds and diesel driveline at TW#2 well bldg.

Becker Construction - Fabricated and installed a new roof over the TW2 regulating tank, replacing the unsafe and rotting previous structure.

City of La Grande Public Works - Brought a high-pressure water pump truck and hoses to free up the debris in the intake. The structure was plugged with rocks, gravel, sediment load, trees and root wads.

EC Power - Did service inspections on our power generators.

Ed Brown Inc. - Cleaned the well shaft of tempering well #2 using an Explosive Power Device.

Elkhorn Electric – Completed electrical wiring for the new alarm system. Relocated fluorescent light fixtures in the CTUIR annex building. Repaired/replaced faulty wiring in hatchery residence #2. Made modification to PLC cabinet in conjunction with wiring to upgrade the well control systems. Installed a new fan motor in the walk-in freezer. Repaired heaters in hatchery buildings.

EP Johnson - Installed the new Aboveground Storage Tank for diesel fuel at the TW2 building.

Elcon Engineering - Installed and programmed PLC (programmable logic controller) for TW2 motor control interface and hatchery alarm system.

Fashion Floors - Replaced damaged sub-flooring and vinyl in all three hatchery residences.

Foster Plumbing and Heating - Repaired the broken pipes, faulty valves, low point pipe drains, and hot water heater at the Imnaha Satellite facility.

Frank McGowan Construction - Installed new Griswolds for the chillers, tested flows, debugged system components, and prepared the chillers for hydro testing with new system interface.

Mascott Equipment - Installed control system for Aboveground Storage Tank at the intake.

Mitrac Construction - Performed an emergency excavation of rock and debris that was plugging up the intake at the Imnaha facility. Deepened the intake channel and removed rocks from in front of the grizzlies at the intake that were deposited by late spring runoff.

Peterson Electric - Replaced pre-lube solenoid valves at hatchery tempering well # 2.

Purswell Pump - Removed, repaired and re-installed 200HP electric pump for tempering well # 2. Repaired right angle drive and clutch assembly. Pulled, repaired and reinstalled 400 foot Vertical Turbine Pump.

Thews Sheet Metal - Installed new air conditioning system in the TW2 well building.

Triad, Inc. - Completed finish work on the water piping system in the hatch house.

Vanleuven Construction - Replaced faulty sliding glass doors on all three hatchery residences.

MAJOR EXPENSES

| | |
|------------------------------------------------------------|-------------|
| Emergency repair work to tempering well #2 | \$34,034.00 |
| Fish food | 29,406.56 |
| Purchase portable flow meter for reading pipe flow | 9,070.00 |
| Emergency electrical service to tempering well #2 | 5,000.00 |
| Replaced vinyl in hatchery residences | 4,758.74 |
| Purchased electric pressure washer | 4,002.00 |
| Staff gauge and Temperature probe installation in LG Creek | 3,200.00 |
| Replace sliding glass doors in hatchery residences | 2,625.00 |
| Electrical maintenance to facility | 2,362.17 |
| Replace carpet/pad in hatchery residence #1 | 2,190.74 |

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|--------------|--------------------|
| <u>Total</u> | <u>\$96,649.21</u> |
|--------------|--------------------|

Adult Returns to Hatchery

Chinook Rapid River Stock BY99

Lookingglass Fish Hatchery

| | |
|------------------------------------------------|--------------------|
| Date of first return: | June 16, 1999 |
| Date of last return: | September 9, 1999 |
| Number of females returning: | 26 |
| Number of males returning: | 40 |
| Date of peak returns: | June 16, 1999 |
| Number of females released to spawn naturally: | 0 |
| Number of males released to spawn naturally: | 0 |
| Mortality of all adult returns: | 1 females; 1 males |

Seven males and 10 females (Ad + CWT) were transported to Lyons Ferry Hatchery, where they were held until ripe and spawned; 32 males and 15 females (Ad only or unmarked) were transported to South Fork Walla Walla Facility, where they were held until ripe and spawned.

Adults Trapped Off Hatchery and Transported to Hatchery

Chinook Imnaha Stock BY99

Lookingglass Fish Hatchery

| | |
|------------------------------------------------|----------------------------|
| Where trapped: | Imnaha Satellite Facility |
| Date weir installed: | July 21, 1999 |
| Dates trapped: | July 21 -September 7, 1999 |
| Number of females returning: | 76 |
| Number of males returning: | 320* |
| Date of peak returns: | August 23, 1999 |
| Number of females released to spawn naturally: | 37 |
| Number of males released to spawn naturally: | 83 |
| Mortality of all adult returns: | 2 females, 10 males |

**Of the 320 total males, 188 were jacks.*

Conventional Chinook Program

Grande Ronde River Stock BY99

Lookingglass Fish Hatchery

| | |
|--------------------------------------------------------|----------------------------|
| Where trapped: | Upper Grande Ronde Weir |
| Dates trapped: | May 6 - September 24, 1999 |
| Number of adults trapped: | 1 unknown |
| Number of adults released to spawn naturally: | 1 unknown |
| Number of adults transported to hatchery: | 0 |
| Mortality of all adults trapped: | 0 |
| Number of adults released back to river from hatchery: | 0* |

**Chinook numbers were insufficient to sustain a hatchery breeding program in 1999.*

Catherine Creek Stock BY99

Lookingglass Fish Hatchery

| | |
|--------------------------------------------------------|----------------------------|
| Where trapped: | Catherine Creek Weir |
| Dates trapped: | May 7 - September 27, 1999 |
| Number of adults trapped: | 1 female; 15 unknown |
| Number of adults released to spawn naturally: | 1 female; 15 unknown |
| Number of adults transported to hatchery: | 0 |
| Mortality of all adults trapped: | 0 |
| Number of adults released back to creek from hatchery: | 0* |

**Chinook numbers were insufficient to sustain a hatchery breeding program in 1999.*

Lostine River Stock BY99

Lookingglass Fish Hatchery

| | |
|--------------------------------------------------------|----------------------------|
| Where trapped: | Lostine River Weir |
| Dates trapped: | April 19 - October 1, 1999 |
| Number of adults trapped: | 7 females; 5 males |
| Number of adults released to spawn naturally: | 4 females; 6 males |
| Number of adults transported to hatchery: | 1 female; 1 male |
| Mortality of all adults trapped: | 0 |
| Number of adults released back to river from hatchery: | 1 female; 1 male* |

**The two Chinook taken to Lookingglass Fish Hatchery were released back to the Lostine River at river kilometer 18.5 on August 13, 1999. Chinook numbers were insufficient to sustain a hatchery breeding program in 1999.*

Spawning Record

Chinook Imnaha Stock BY99

Lookingglass Fish Hatchery

| Date Spawned | Number of Eggs Taken | Females Spawned | Males Spawned |
|--------------|----------------------|-----------------|---------------|
| 8/06/99 | 3,541 | 1 | 2 |
| 8/12/99 | 3,976 | 1 | 4 |
| 8/19/99 | 10,421 | 2 | 16 |
| 8/25/99 | 67,973 | 14 | 55 |
| 8/27/99 | 22,535 | 5 | 28 |
| 9/01/99 | 42,869 | 10 | 52 |
| 9/09/99 | 17,615 | 4 | 42 |

Total number of females spawned: 37
 Total number of males spawned: 187 (*some were reused*)
 Total number of green eggs: 168,930
 Total number of eyed eggs: 128,777
 Number of eggs retained for rearing: 0
 Number of eggs shipped: 128,777*
 Date of last spawning: 9/09/99

**Due to lack of chilled well water at Lookingglass Fish Hatchery, Imnaha stock eggs were shipped to either Irrigon or Oxbow fish hatcheries with the appropriate sperm. Mixing of eggs and sperm took place at these facilities. Eggs will be incubated as follows:
 Green eggs shipped to Oxbow Fish Hatchery: 74,539.
 Green eggs shipped to Irrigon Fish Hatchery: 94,391.
 All eyed eggs will be reared at Irrigon Fish Hatchery.*

Spawning Record

Chinook Rapid River Stock BY99

All 1999 brood Rapid River chinook returning to Lower Granite Dam were trucked directly to Lyons Ferry Fish Hatchery. In addition, the Ad + CWT marked chinook returning to Lookingglass Fish Hatchery were trucked to Lyons Ferry Fish Hatchery. Chinook spawned at Lyons Ferry became part of the Nez Perce tribal fishery program.

The unmarked or Ad-only 1999 brood Rapid River chinook returning to Lookingglass Fish Hatchery were trucked to South Fork Walla Walla Fish Hatchery and held until spawning. Green eggs were shipped to Irrigon Fish Hatchery for incubation and rearing.

South Fork Walla Walla Facility Unmarked Chinook only

| Date Spawned | Number of Eggs Taken | Females Spawned | Males Spawned |
|--------------|----------------------|-----------------|---------------|
| 8/24/99 | 3,185 | 1 | 2 |
| 8/31/99 | 14,080 | 4 | 6 |
| 9/07/99 | 10,277 | 3 | 7 |

| | |
|-------------------------------------|---------|
| Total number of females spawned: | 8 |
| Total number of males spawned: | 12 |
| Total number of green eggs: | 27,542 |
| Total number of eyed eggs: | 25,040 |
| Number of eggs retained for rearing | 0 |
| Number of eggs shipped: | 25,040* |
| Date of last spawning: | 9/07/99 |

**Eggs were shipped to Irrigon Fish Hatchery for incubation and rearing.*

Rearing to Fingerling Stage Only

Chinook
Rapid River Stock BY98

| | |
|-----------------------------------------------|--------|
| Number of fingerlings produced: | 57,290 |
| Weight of fingerlings produced (lbs.): | 450.04 |
| Percent mortality from egg take to stocking: | 18.0% |
| Average number/pound of fingerlings produced: | 127.30 |
| Conversion rate: | 0.45 |

Rearing to Smolt Stage Only

Chinook
Rapid River Stock BY97

| | |
|----------------------------------------------|-----------|
| Number of smolts produced: | 312,145 |
| Weight of smolts produced (lbs.): | 14,473.37 |
| Percent mortality from egg take to stocking: | 24.7% |
| Average number/pound of smolts produced: | 21.57 |
| Conversion rate: | 1.30 |

Chinook
Imnaha Stock BY97

| | |
|------------------------------------------|-----------|
| Number of smolts produced: | 194,967 |
| Weight of smolts produced (lbs.): | 10,691.48 |
| Percent mortality to stocking: | 29.7% |
| Average number/pound of smolts produced: | 18.24 |
| Conversion rate: | 0.60 |

Rearing to Smolt Stage Only

Chinook

Lostine River Stock BY97

| | |
|----------------------------------------------|--------|
| Number of smolts produced: | 11,871 |
| Weight of smolts produced (lbs.): | 642.02 |
| Percent mortality from egg take to stocking: | 34.5% |
| Average number/pound of smolts produced: | 18.49 |
| Conversion rate: | 1.70 |

These fish are progeny from the 1997 conventional chinook program. They were reared at Lookingglass Fish Hatchery and acclimated and released from Lostine Acclimation Facility by the Nez Perce Tribe.

Food Fed and Weight Gain

Chinook

Rapid River Stock BY97

Lookingglass Fish Hatchery

| | |
|-----------------------------------------------|-----------|
| Total pounds of food fed | 20,849.22 |
| Conversion rate | 1.30 |
| Total weight gain (lbs.) - all sizes produced | 16,050.25 |

Chinook

Rapid River Stock BY98

Lookingglass Fish Hatchery

| | |
|-----------------------------------------------|--------|
| Total pounds of food fed | 356.36 |
| Conversion rate | 0.45 |
| Total weight gain (lbs.) - all sizes produced | 793.27 |

Chinook

Imnaha Stock BY97

Lookingglass Fish Hatchery

| | |
|-----------------------------------------------|-----------|
| Total pounds of food fed | 18,237.25 |
| Conversion rate | 0.60 |
| Total weight gain (lbs.) - all sizes produced | 30,554.75 |

Food Fed and Weight Gain

**Chinook
Imnaha Stock BY98**

| | |
|-----------------------------------------------|----------|
| Lookingglass Fish Hatchery | |
| Total pounds of food fed | 6,867.50 |
| Conversion rate | 1.00 |
| Total weight gain (lbs.) - all sizes produced | 6,850.45 |

**Chinook
Lostine River Stock BY97**

| | |
|-----------------------------------------------|--------|
| Lookingglass Fish Hatchery | |
| Total pounds of food fed | 968.35 |
| Conversion rate | 1.70 |
| Total weight gain (lbs.) - all sizes produced | 577.97 |

**Chinook
Upper Grande Ronde River Stock (F1's) BY98**

| | |
|-----------------------------------------------|-------|
| Lookingglass Fish Hatchery | |
| Total pounds of food fed | 61.57 |
| Conversion rate | 0.96 |
| Total weight gain (lbs.) - all sizes produced | 63.85 |

These are progeny of captive brood parents spawned in 1998.

**Chinook
Lostine River Stock (F1's) BY98**

| | |
|-----------------------------------------------|----------|
| Lookingglass Fish Hatchery | |
| Total pounds of food fed | 1,279.26 |
| Conversion rate | 0.95 |
| Total weight gain (lbs.) - all sizes produced | 1,353.56 |

These are progeny of captive brood parents spawned in 1998.

Food Fed and Weight Gain

Chinook
Catherine Creek Stock (F1's) BY98

Lookingglass Fish Hatchery

| | |
|-----------------------------------------------|----------|
| Total pounds of food fed | 1,298.73 |
| Conversion rate | 1.08 |
| Total weight gain (lbs.) - all sizes produced | 1,205.37 |

These are progeny of captive brood parents spawned in 1998.

Chinook
Upper Grande Ronde Stock 98 Cohort

Lookingglass Fish Hatchery

| | |
|-----------------------------------------------|--------|
| Total pounds of food fed | 0 |
| Conversion rate | 0 |
| Total weight gain (lbs.) - all sizes produced | - 3.57 |

These fish were collected as parr in 1999.

Chinook
Lostine River Stock 98 Cohort

Lookingglass Fish Hatchery

| | |
|-----------------------------------------------|--------|
| Total pounds of food fed | 0.69 |
| Conversion rate | 0.10 |
| Total weight gain (lbs.) - all sizes produced | - 7.05 |

These fish were collected as parr in 1999.

Chinook
Catherine Creek Stock (F1's) BY98

Lookingglass Fish Hatchery

| | |
|-----------------------------------------------|--------|
| Total pounds of food fed | 1.89 |
| Conversion rate | 0.28 |
| Total weight gain (lbs.) - all sizes produced | - 6.67 |

These fish were collected as parr in 1999.

FY99 Stocking

| | |
|-----------------------------------------------------|---------------|
| Total number of distribution trips: | 7 |
| Number of fry stocked: | 0 |
| Weight of fry stocked: | 0 lbs |
| Number of fingerlings (~125/fpp) stocked: | 57,290 |
| Weight of fingerlings stocked: | 450.04 lbs |
| Number of smolts stocked: | 518,983 |
| Weight of smolts stocked: | 25,806.87 lbs |
| Number of legal trout stocked: | 0 |
| Weight of legal trout stocked: | 0 lbs |
| Date, location, number and weight at each stocking: | See Attached |